WHAT IS CLAIMED IS:

1. A neuromuscular monitoring system using phonomyography, comprising:

means for applying muscle-activating stimulation signals to a patient's body via at least one electrode;

means for sensing pressure waveform signals produced by a patient's muscle in response to the applied stimulation signals; and

means for processing the sensed pressure waveform signals, and means for displaying data, from the processing means, related to the sensed pressure waveform signals.

2. A neuromuscular monitoring system using phonomyography, comprising:

at least one neurostimulator to apply muscle-activating stimulation signals to a patient's body via at least one electrode;

at least one pressure waveform sensor to detect pressure waveform signals produced by a patient's muscle in response to the applied stimulation signals; and

a processor of the detected pressure waveform signals and a display of data, from the processor, related to the detected pressure waveform signals.

3. The neuromuscular monitoring system of claim 2, wherein the data displayed through the display is selected from the group consisting of: raw pressure waveform signals detected through said at least one pressure waveform sensor, amplitudes of the pressure waveform signals, and ratios of said amplitudes.

4. The neuromuscular monitoring system of claim 2, further comprising an amplifier for amplifying the pressure waveform detected by said at least one pressure waveform sensor.

5. The neuromuscular monitoring system of claim 2, comprising a controller connected to said at least one neurostimulator and to said at least one pressure waveform sensor, said controller incorporating the processor and display.

6. The neuromuscular monitoring system of claim 5, wherein the controller includes a laptop computer.

7. The neuromuscular monitoring system of claim 5, wherein said controller includes a pocket computer.

8. The neuromuscular monitoring system of claim 2, wherein said at least one neurostimulator includes a plurality of neurostimulators respectively associated to different muscles of the patient.

9. The neuromuscular monitoring system of claim 2, wherein said at least one pressure waveform sensor includes a plurality of pressure waveform sensors respectively associated to different muscles of the patient.

10. The neuromuscular monitoring system of claim 2, wherein said at least one pressure waveform sensor has a detection frequency bandwidth ranging from about 2 Hz to about 10 Hz.

11. The neuromuscular monitoring system of claim 10, wherein said at least one pressure waveform sensor comprises at least one microphone.

12. The neuromuscular monitoring system of claim 2, wherein the muscle-activating stimulation signals comprises single stimulation signals.

13. The neuromuscular monitoring system of claim 5, wherein the controller is so configured as to:

- before the administration of a relaxant to the patient:

apply a predetermined muscle-activating stimulation signal to the patient's body through said at least one neurostimulator and via said at least one electrode;

sample the pressure waveform signal detected by said at least one pressure waveform sensor in response to the applied predetermined stimulation signal;

measure a reference amplitude (A_{ref}) of the sampled signal;

- after a relaxant has been administered to the patient:

apply the predetermined muscle-activating stimulation signal through said at least one neurostimulator and via said at least one electrode;

sample the pressure waveform signal detected by said at least one pressure waveform sensor in response to the applied predetermined stimulation signal;

measure an amplitude (A) of the response signal;

calculate a ratio A / A_{ref}; and

display the calculated ratio.

14. The neuromuscular monitoring system of claim 2, wherein the muscle-activating stimulation signals comprises train-of-four twitches.

15. The neuromuscular monitoring system of claim 5, wherein the muscle-activating stimulation signals comprise train-of-four twitches, and wherein the controller is so configured as to:

measure a peak-to-peak amplitude of a pressure waveform signal detected by said at least one pressure waveform sensor in response to a first pulse of the train-of-four (T1);

measure a peak-to-peak amplitude of a pressure waveform signal detected by said at least one pressure waveform sensor in response a fourth pulse of the train-of-four (T4);

calculate a ratio T4/T1; and

display the calculated ratio.

16. A neuromuscular monitoring method using phonomyography, comprising:

providing at least one pressure waveform sensor;

positioning said at least one pressure waveform sensor at a predetermined position of a patient's body;

providing at least one electrode;

positioning said at least one electrode at a predetermined position of the patient's body;

applying a muscle-activating stimulation signal to the patient's body via said at least one electrode;

sampling a pressure waveform signal detected by said at least one pressure waveform sensor in response to the applied muscle-activating stimulation signal;

measuring a reference amplitude (A_{ref}) of the sampled signal;

- after a relaxant has been administered:

applying a subsequent muscle-activating stimulation signal to the patient's body via said at least one electrode;

sampling a subsequent pressure waveform signal detected by said at least one pressure waveform sensor in response to the subsequent muscle-activating stimulation signal;

measuring an amplitude (A) of the subsequent pressure waveform signal;

calculating a ratio A / A_{ref}; and

displaying the calculated ratio.

17. The neuromuscular monitoring method of claim 16, wherein applying a muscle-activating stimulation signal comprises applying a single pulse stimulation signal.

18. The neuromuscular monitoring method of claim 16, wherein measuring an amplitude comprises measuring a peak-to-peak amplitude.

19. A neuromuscular monitoring method using phonomyography, comprising:

providing at least one pressure waveform sensor;

positioning said at least one pressure waveform sensor at a predetermined position of a patient's body;

providing at least one electrode;

positioning the at least one electrode at a predetermined position of the patient's body;

applying muscle-activating stimulation signals to the patient's body via said at least one electrode;

sampling pressure waveform signals detected by said at least one pressure waveform sensor in response to the applied muscle-activating stimulation signals;

processing the detected pressure waveform signals; and

displaying data, from the act of processing, related to the detected pressure waveform signals.

20. The neuromuscular monitoring method of claim 19, wherein:

processing the detected pressure waveform signals comprises measuring amplitudes of the detected pressure waveform signals; and

displaying data comprises displaying the detected pressure waveform signals and the measured amplitudes.

21. The neuromuscular monitoring method of claim 19, wherein applying muscle-activating stimulation signals comprises applying train-of-four twitches.

22. The neuromuscular monitoring method of claim 20, wherein applying muscle-activating stimulation signals comprises applying train-of-four twitches, and wherein measuring amplitudes of the detected pressure waveform signals comprises:

measuring a peak-to-peak amplitude of the pressure waveform signal detected by said at least one pressure waveform sensor in response to a first pulse of each train-of-four (T1);

measuring a peak-to-peak amplitude of the pressure waveform signal detected by said at least one pressure waveform sensor in response to a fourth pulse of the same train-of-four (T4); and

calculating a ratio T4/T1.

23. The neuromuscular monitoring method of claim 22, wherein displaying the measured amplitudes comprises displaying T4/T1 calculated ratio.